Communicable Disease Report

Hawai'i Department of Health
Communicable Disease Division

March/April 1999

Anthrax and Bioterrorism

What is It?

Anthrax is an acute bacterial disease usually affecting the skin, but which may rarely involve the oropharynx, lower respiratory tract, mediastinum or intestinal tract.[1] It is caused by *Bacillus anthracis,* a gram-positive, encapsulated, spore-forming, nonmotile rod. It causes disease primarily in herbivorous mammals, while humans and carnivorous mammals are incidental hosts.

In humans, it is primarily an occupational hazard of workers who process hides, hair (especially from goats), bone and bone products and wool. It is also a risk for veterinarians, agricultural and wildlife workers who handle infected animals. Human anthrax is endemic in agricultural regions of the world where anthrax in animals is common, including countries in South and Central America, southern and eastern Europe, Asia, Africa, the Caribbean and the Middle East.

The incubation period ranges from two to 60 days. There are three forms:

- Cutaneous, the most common form (95-98% of cases), results from spores entering the body through broken or abraded skin;
- Inhalation, through breathing in aerosolized spores; and
- Intestinal, via ingestion of infected animal tissues.

The fatality rate from infection with anthrax is high. Untreated cutaneous anthrax has a fatality rate of 5-20%, while the fatality rate of inhalation anthrax may approach 100%, even with treatment. Intestinal anthrax results in death in 25-60% of cases.

Environmental Resistance

When an animal dies of anthrax, vegetative forms of the bacteria sporulate on exposure to air. The spores are very resistant to adverse environmental conditions and disinfection. They may remain viable in contaminated soil for many years after the source-animal infection has terminated. Dried or processed skins and hides of infected animals may harbor the spores for years and are the fomites by which the disease is spread. In Hawai`i in 1937, a cow contracted anthrax after disturbing a burial mound containing the remains of cattle that died in a 1917 outbreak of anthrax.

Anthrax in the United States

The disease is rare in the United States (U.S.); since 1980, only six human cases have been reported with the last case occurring in 1992. The disease in animals is also rare, with most reports of animal infection coming from Texas, Louisiana, Mississippi, Oklahoma and South Dakota. Rare outbreaks in wildlife, e.g. white-tail deer, have also been recorded. The last documented outbreak of anthrax in Hawai`i was in a herd of dairy cattle in 1938.

Anthrax Vaccine

A human vaccine is manufactured by Bioport Corporation in Michigan, but supply is limited. It is made from a purified protein of the bacteria and is very safe. However, it requires six doses over 18 months for complete immunity, followed by annual boosters. It is used primarily by wool handlers and the military. Routine vaccination of civilian populations is not recommended. It has not been evaluated for safety and efficacy in children aged less than 18 years or adults aged greater than 60 years. A vaccine is also available for livestock.

An Agent For Bioterrorism

In light of the two bioterrorist incidents in Honolulu in February 1999, Hawai`i is following a recent national trend of individuals receiving threats of anthrax spores in the mail. The capacity for use of anthrax as a biological weapon has existed throughout this century. During World War I, Germany hid tiny, sealed glass tubes containing the anthrax bac-

continued on page 5

Hepatitis C: A Reportable Disease

In October of 1997, Hepatitis C (HCV) was added to the Communicable Disease Division's list of Notifiable Diseases. As a result, health care providers must report all acute hepatitis C cases, and clinical laboratories must report all patients who test positive for hepatitis C virus. Reporting of Hepatitis C cases is important for understanding the epidemiology of this illness in Hawai`i so that appropriate strategies to prevent infection can be developed and implemented.

1998 Case Review

In 1998, 1,723 persons were reported to the Department of Health (DOH) as hepatitis C positive. There were 1,110 cases (64%) in males, and 613 (36%) in females. Of the 617 cases with residence information, 448 (73%) were from O`ahu, 87 (14%) were from Maui, 72 (12%) from the island of Hawai`i, and 8 (1%) from Kaua`i. Two cases were reported from Lana`i. Ethnic data was available for only 9.5% of the cases; Sixty-seven percent were identified as Caucasian, 10% Hawaiian-Part Hawaiian, 5%-African American, 5%-Japanese, 4%-Hispanic, 4% Mixed, 2%-Filipino, and all other ethnic groups, 3%. Age ranged from less than one year to 85 years, with a mean of 42.6 years. A brief overview of the disease follows.

An Overview

HCV, a flavivirus, is the etiologic agent in most cases of parenterally transmitted non-A, non-B hepatitis in the United States. The Centers for Disease Control and Prevention (CDC) estimates that the annual number of newly acquired HCV infections ranged from 180,000 in 1984 to 28,000 in 1995. The decline was due to availability of a new diagnostic test. Approximately 85% of persons who contract HCV infection become chronically infected.[1] Up to 10% of parenterally transmitted non-A, non-B hepatitis may be caused by other blood borne viral agents not yet characterized (non-ABCDE hepatitis)[2].

Clinical Features

The signs and symptoms of HCV infection are indistinguishable from hepatitis A or B infections, and include anorexia, abdominal discomfort, nausea, vomiting and jaundice. Severity ranges from inapparent cases in approximately 75% of infections, to rare fulminating, fatal cases. Asymptomatic chronic liver disease with fluctuating or persistently elevated liver enzymes is common. Symptoms may appear months or years after infection with the onset of cirrhosis. Of those with chronic liver disease, 30-60% may develop chronic active hepatitis and 5-20% may develop cirrhosis. There also appears to be an association between HCV infection and hepatocellular carcinoma. The incubation period for HCV infection averages 6-9 weeks with a range of 2 weeks to 6 months. Immunity following infection is unknown. No protective antibody response has been demonstrated for the infection.

Diagnosis

The primary diagnostic test for HCV is a serologic enzyme immunosorbent assay (EIA). A third generation EIA detects anti-HCV in >95% of patients with HCV infection. However, use and interpretation of the test is limited by several factors:

- These assays do not detect anti-HCV in all infected persons;
- The tests do not distinguish between acute, chronic or resolved infections;
- Detection of infection in most HCV-infected persons does not occur for an average of 10-12 weeks after exposure to HCVand up to nine months following onset of illness; and
- False positive results may be observed in populations at low risk for HCV infections.

Although no true confirmatory test has been developed, supplemental tests are available (such as the licensed Recombinant Immunoblot Assay [RIBA]) to identify true infections, and should always be used to verify repeatedly reactive results obtained with screening assays[1].

A HCV RNA polymerase chain reaction (PCR) test is also available. Although PCR assays have not been approved by the U.S. Food and Drug Administration (FDA), qualitative PCR tests for detecting HCV RNAare available from several commercial laboratories for research purposes. These results may vary considerably between laboratories. Yet PCR testing may detect acute infections much earlier than by EIA antibody testing, 1-2 weeks after exposure to the virus and weeks prior to the appearance of anti-HCV[3].

Quantitative PCR tests for measuring the concentration (titer) of HCV RNA have been developed and are available from commercial laboratories. These quantitative assays are not FDA-approved, but may help predict likelihood of response to antiviral therapy[3].

Transmission

Transmission of HCV is not completely understood. Most known HCV transmission is associated with:

1) Direct percutaneous exposure to contaminated blood and plasma derivatives. High seroprevalence rates of infection are seen among hemophiliacs who received multiple blood transfusions and hemodialysis patients who received repeated percutaneous exposures; and

continued on page 6

Communicable Disease Report

Communicable Disease Division	586-4580
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Hansen's Disease Institutions Branch	586-4580
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Update: Occupational Exposure to HIV

Background

The following provides health care workers (HCWs) and clinicians with the most recent United States Public Health Service (USPHS) guidelines for managing occupational exposures to Human Immunodeficiency Virus (HIV) and recommendations for postexposure prophylaxis (PEP).

As of June 30, 1998, 54 health care workers (HCWs) in the United States had documented HIV seroconversion after an occupational exposure, after testing negative for HIV antibodies at the time of exposure. Forty-nine (91%) HCWs were exposed to the blood of an HIV-infected person, three to concentrated HIV in a laboratory, one to visibly bloody body fluid, and one to an unspecified fluid. Forty-six (85%) exposures consisted of percutaneous injuries. Five (9%) had mucocutaneous exposures, while two HCWs had both percutaneous and mucocutaneous exposures and one had an unknown route of exposure. Exposures occurred in 22 (41%) nurses and 16 (30%) clinical laboratory technicians.

The Centers for Disease Control and Prevention (CDC) is aware of another 133 HIV-infected HCWs with a history of occupational exposure with no other reported risk factors. HIV seroconversion after exposure was not documented so the number of HCWs who acquired their infection through occupational exposure is not known.

There is no updated information for occupationally acquired HIV infection of HCWs in Hawai`i, as the retrospective survey of health care facilities is no longer performed.

continued on page 4

It's The Law!

Vaccine Information Statements

A recent vaccine complication in Florida highlights the importance of distributing the most recent Vaccine Information Statements (VISs) to your patients. In 1997, a 3-month-old boy developed vaccine-associated paralytic poliomyelitis (VAPP) following a first dose of Oral Polio Vaccine (OPV). The boy's parents reported that their physician furnished them with the 1994 polio VIS at the time of vaccination. The polio VIS had been revised in 1997 to reflect the Advisory Committee on Immunization Practices preference for sequential use of inactivated polio vaccine (IPV) followed by live polio vaccine (OPV). As a result, the 1994 polio statement given to the parent was outdated.[1]

What Vaccine Information Statement VIS's must be used?

The National Childhood Vaccine Injury Act (NCVIA)[2] requires all health care providers in the United States who administer any vaccine containing diphtheria, tetanus, pertussis, measles, mumps, rubella, polio, hepatitis b, *Haemophilus influenza* type b (Hib), and varicella antigens shall, prior to administration of each dose of vaccine, provide a copy of the relevant VIS to either the adult vaccinee or, in the case of a minor, to the parent or legal representative.

What VISs are currently available from the Centers for Disease Control and Prevention (CDC), and when were they most recently updated?

MMR (12/16/98)	DTP/DTaP/DT (8/15/97)	Polio (2/1/99 Interim)
Hib (12/16/98)	Varicella (12/16/98)	Hepatitis B (12/18/98)
Hepatitis A (8/25/98)	Influenza (7/1/98)	Pneumococcal (7/29/97)
Td (6/10/94)	Rotavirus (12/1/98 Interim)	

Effective June 1, 1999, each health care provider who administers any vaccine that contains hepatitis B, *Haemophilus influenza* type b (Hib), varicella (chickenpox), measles, mumps, or rubella vaccines shall, prior to administration of each dose of the vaccine, provide a copy of the relevant vaccine information materials, dated December 16, 1998, to the parent or legal representative of any child, or adult, to whom such provider intends to administer the vaccine. In addition, as soon as practical after February 23, 1999, health care providers should distribute copies of the interim polio vaccine information materials, dated February 1, 1999 in place of the February 6, 1997 version of the polio materials.

Who must use these Vaccine Information Statements?

All public and private providers who administer the vaccines covered by the NCVIA are required to use the CDC developed materials. More information on the VISs may be accessed from the CDC's National Immunization Program web site at **http://www.cdc.gov/nip/publications/VIS.**

How do I obtain VISs?

The Hawai`i Immunization Program prints and distributes VISs to all public and private health clinics enrolled in the Vaccines for Children Program. Private providers may obtain a single copy of current VISs for printing and use in their practice. The VIS's are also available on the National Immunization Program's internet website (See above). These are identical to the printed VISs, and may be printed for use.

What are the record keeping requirements regarding the VISs?

Health care providers are not required to obtain the signature of the patient, parent, or legal representative acknowledging receipt of the VIS. However, to document that the VIS was given, health care

continued on page 5

Exposure to HIV

continued from page 3

Recommendations

The USPHS issued updated guidelines for the management of HCWs exposed to HIV and recommendations for PEP in May 1998.[1] This document includes guidelines for determining the degree of exposure, the HIV status code, prophylaxis regimens, and PEP resources and registries.

The risk of HIV infection from an occupational exposure varies with the type of exposure and other factors such as:[2]

- The amount of blood or body fluid;
- The concentration of HIV in the blood or body fluid;
- The exposed person's underlying health and immune status; and
- Whether PEP was started.

The prevention of bloodborne exposures is the primary means of preventing occupationally acquired HIV infection. These include using medical devices with safety features designed to prevent injuries (e.g., retractable syringes), practicing safe techniques (e.g., not recapping needles by hand), and by disposing of used needles in appropriate sharps disposal containers. When one might expect contact with blood or other potentially infected material, barrier protection (e.g., gloves, eye and face protection) is recommended.

Health care and public safety workers who could potentially be exposed to bloodborne pathogens are required to adhere to Occupational Safety and Health Administration (OSHA) standards that took effect in March 1992.[3] This standard was revised in 1996. An update was provided in an earlier issue.[4]

Forthcoming

Last year, OSHA called for information and comment on engineering and work practice controls used to eliminate or minimize the risk of occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated needles and other sharps. It is considering possible actions to provide assistance in this area.[5]

Locally, a House Resolution (House Concurrent Resolution No. 161/ House Resolution No. 146) is requesting that the Department of Health (DOH), the Hawai`i Health Systems Corporation, the Hawai`i Nurses'Association and the University of Hawai`i School of Nursing, jointly develop a plan to eliminate or greatly reduce needlestick injuries incurred by nurses and other HCWs.[6]

HCWs Infected with HIV and/or HBV

In 1994, the DOH established a policy statement and guidelines regarding HCWs in Hawai`i infected with HIV and/or hepatitis B virus (HBV), pursuant to Act 265: *A Bill for an Act Relating to Health Care Workers.*[7] This allows for the Director of Health to convene an advisory committee as needed to provide advice and recommendations to HCWs infected with HIV, HBV, or other bloodborne infections, regarding the risks of bloodborne disease transmission through exposure-prone invasive procedures. The advisory committee may recommend changes in the HCW's practice to reduce the possibility of transmission to patients. The committee is composed of:

- An infectious disease specialist with expertise that is appropriate to the specific case;
- A professional peer of the infected HCW who has expertise in the professional practice that is performed by the infected HCW;
- Possibly the infected HCW's personal physician; and
- If the HCW's practice is facility-based, members of the facility's infection control committee.

The DOH provides oversight and necessary staff support to the advisory committees.

For copies of the ***Public Health Service Guidelines for the Management of Health-Care Worker Exposures to HIV and Recommendations for Prophylaxis***[1], and/or information on the ***Advisory Committee for Health Care Workers Infected with HIV and/or HBV Policy Statement and Guidelines,*** please contact the Sexually-Transmitted Disease Clinic at (808) 733-9281 in Honolulu.

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[2] Centers for Disease Control and Prevention, Hospital Infections Program. Occupational Exposure to HIV: Information for Health-Care Workers, 1998. Internet address: **www.cdc.gov/ncidod/hip/saq.htm.**

[3] Occupational Safety and Health Administration, U.S. Department of Labor. Bloodborne Pathogens, *Federal Register,* 1991, 1910.1030.

[4] Fuller L and Sasaki D. Update: ZDV Postexposure Prophylaxis for HIV. *Communicable Disease Report,* November/December 1996, Hawai`i Department of Health.

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[6] House of Representatives, Twentieth Legislature, State of Hawai`i, 1999. House Concurrent Resolution No. 161 and House Resolution No. 146 offered by Representative Alexander Santiago.

[7] Act 265 H.B. No. 3164, A Bill for an Act Relating to Health Care Workers, 1994. *Hawai`i Revised Statutes, Chapter 325.*

Submitted by Laverne Fuller, M.P.H., STD Clinic Manager, STD/AIDS Prevention Branch.

Errata!

There was an error in the dosage of Recombivax HB® in the article entitled "Recommended Childhood Immunization Schedule, United States, 1999" in the January-February 1999 issue of the Communicable Disease Report. The dose was given as 5mg/0.5 ml of Recombivax HB®..." **The correct dose of Recombivax HB® should read 5 mcg/0.5 ml dose of Recombivax HB®..."**

Anthrax

continued from page 1

teria in sugar lumps to be fed to Allied draft horses.[2] In World War II, the British inserted tubes filled with anthrax spores into dairy cattle feed to be dropped from bombers. Recently, anthrax has replaced "bomb scares" as the favorite hoax threat, with many incidents occurring in the U.S. in the past year. The recent scares in Hawai`i provided a test of readiness to the Federal and State teams called to respond to such emergencies. Microscopic laboratory examination of the powders in the threatening letters received in February failed to reveal anthrax spores, and cultures of the powders were negative for *B. anthracis.*

It should be noted that the likelihood of developing cutaneous disease is low after exposure of anthrax spores to intact skin.[3] The basis for such threats is that anthrax spores can be delivered as an aerosol. However, the risk of contracting anthrax through re-aerosolization appears to be low in settings where anthrax spores were released unintentionally or were present at low levels.

The Centers for Disease Control and Prevention has developed recommendations for postexposure prophylaxis when and if an anthrax bioterrorist attack is confirmed.[3] It is based on chemoprophylaxis with oral fluoroquinolone or doxycycline antibiotics, vaccination, and personal and environmental decontamination.

For additional information on anthrax, visit the Centers for Disease Control and Prevention internet website at **http://www.cdc.gov/health/diseases.htm.** A fact sheet on the disease is also available on the DOH website at **http://www.hawaii.gov/doh/resource/comm_dis/factsheet.html.**

REFERENCES:

[1] Benenson, Abram S., Ed. Control of Communicable Diseases in Man, 16th Ed., 1995. *Am Pub Hlth Ass,* Washington D.C., pp 18-22.

[2] Willsey, Amy. Anthrax. *Zoonoses Up - date,* Winter 1999, New York State Department of Health,2.

[3] Centers for Disease Control and Prevention. Bioterrorism Alleging Use of Anthrax and Interim Guidelines for Management - United States, 1998. *MMWR,* 1999;48(04):69-74.

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Vaccine Information

continued from page 3

providers must note in each patient's permanent medical record at the time a VIS is provided: (1) the date printed on the VIS; and (2) the date the VIS is given to the vaccine recipient, or the parent or legal representative.

In addition, the NCVIA still requires that health care providers note in the patient's permanent medical record:

- the date of administration of the vaccine;
- he manufacture and lot number of the vaccine; and
- the name and address of the health care provider administering the vaccine (This should be the address of the location of the record. If immunizations are given in a shopping mall, for example, the address would be the clinic location of the permanent record).

Must a VIS be given out every time a vaccine is administered?

Yes. A VIS must be given out with every immunization, including each dose of a multi-dose series. This is done because the statement might have been updated between visits, or the health status of the child could have changed (e.g., he or she may have an evolving neurological disorder).

Must the patient, parent, or legal representative physically take away a copy of each VIS, or is it acceptable to simply let them read a copy and ensure that they understand it?

It is desirable for the person getting the immunization or their representative to actually take the VIS home, because the VIS includes information concerning what to look for and do after the immunization, and what to do if there is a serious reaction. Even if some patients elect not to take the VIS home, the provider should offer them the opportunity to do so.

What about patients who are illiterate?

It is the spirit of the law that providers give their patients certain information about vaccines. If patients are unable to read the VIS, it is up to the provider to ensure that they have the information, by either reading or paraphrasing the VIS to them, and confirming that they understand it.

Are VISs available in languages other than English?

There are currently no "official" CDC translations of the VISs. The Hawai`i Immunization Program has obtained VISs translated in various languages from other states. Copies of the translations are available upon request.

For more information, call the Vaccines for Children Program, Hawai`i Immunization Program in Honolulu at (808) 586-8300.

REFERENCES:

[1] Halsey, Neal A. It's federal law!! NEEDLE TIPS & the Hepatitis B Coalition News, Fall/Winter 1998-1999; 8(2):1.

[2] United States Code, Title 22, Section 300aa-26, 1986.

Submitted by Chuck Miller, M.A., Coordi - nator, Hawai`i Vaccines for Children Program, Hawai`i Immunization Pro - gram, Epidemiology Branch.

Hepatitis C

continued from page 2

2) Sharing of contaminated needles and syringes, i.e., injecting drug use.

However, percutaneous exposures account for less than half of the hepatitis C cases in the United States. Sexual transmission is thought to be uncommon. Transmission among family members without other risk factors appears to be low. No specific source has been identified for most infected children and adolescents.

Status of Treatment and Prevention

Antiviral Agents

Several studies indicate that **treatment** with interferon alfa begun early in the course of HCV infection is associated with an increased rate of resolved infections. It has also been shown to be effective early in the course of chronic HCV infection. However, interferon alfa is approved only for the treatment of chronic hepatitis C. Treatment with the standard dose of interferon alfa (3 million U three times a week subcutaneously for 12 months) normalizes aminotransferase concentrations and leads to the disappearance of HCV RNAfrom serum in approximately 40 percent of patients with chronic hepatitis C. Recently, the FDA approved combination therapy with interferon alfa and ribavirin for the treatment of chronic hepatitis c in patients with compensated liver disease previously untreated with inferon alfa or who have relapsed following inferon alfa therapy.

Two studies in the November 19, 1998 *New England Journal of Medicine* address the role of interferon alfa-2b in combination with ribavirin for the treatment of chronic hepatitis C. McHutchison et al.[3] studied the effect of this combination as an initial therapy for chronic HCV infection, and Davis et al.[4] as a treatment after relapse. The findings of both of these studies indicate that combination therapy as initial therapy and for treatment of relapse of chronic hepatitis C are effective and better than interferon alfa alone.

Treatment is recommended for patients with chronic hepatitis C who are at greatest risk for progression to cirrhosis,[5] as characterized by:

- persistently elevated alanine transaminase (ALT) levels;
- detectable HCV RNA; and
- a liver biopsy indicating portal or bridging fibrosis and or at least moderate degrees of inflammation and necrosis.

The **prevention** of HCV infection with antiviral agents (e.g., interferon alfa) has not been studied. Although interferon alfa therapy is effective in the treatment of chronic hepatitis C, the mechanisms of action are poorly understood. Interferon must be administered by injection and may cause side effects, which has required discontinuation of therapy in up to 15% of patients. Based on these considerations, antiviral agents are not recommended for postexposure prophylaxis of HCV infection. Sustained response rates to interferon alfa therapy generally have been low (10%-20%) in the United States. No clinical, demographic, serum biochemical, serologic, or histologic features have been identified that reliably predict which patients will sustain a long-term remission in response to interferon alfa therapy.

Immune Globulin

The value of immune globulin (IG) for prevention of Hepatitis C is unclear. Available data suggests that postexposure prophylaxis with IG is not effective in preventing infection.

Vaccines

At present, no vaccine against hepatitis C is available.

Counseling Patients with HCV Infection

The Centers for Disease Control and Prevention[6] and the NIH Consensus Statement Regarding Management of Hepatitis C[5] recommend the following for the management of patients with hepatitis C infections:

- Vaccination of cases for hepatitis A and B if the patient is susceptible;
- Abstinence from alcohol, as alcohol adversely impacts the course of the disease; and
- Advising patients not to start any new medicines, including over-the-counter and herbal medicines, without first consulting with their physicians.

Two Surveys

The DOH Epidemiology Branch will soon begin two surveys regarding HCV. An anonymous patient survey will assess behavioral risk factors of persons with hepatitis C infections. The purpose of this survey is to identify other modes of transmission of the disease. Staff will be contacting physicians to explain the survey and requesting information on patients with HCV.

A physician survey will assess the current standard of care of HCV-infected individuals. The survey will include questions on the routine management of HCV patients, including laboratory tests, treatment regimens and counseling of hepatitis C patients.

For more information, please call the Hepatitis Control Section at (808) 586-8324 in Honolulu.

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[1] Hofnagle, Jay. Hepatitis C: The Clinical Spectrum of Disease. The Management of Hepatitis C, NIH Consensus Development Conference, 1997.

[2] Centers for Disease Control and Prevention. Immunization of Health-Care Workers (ACIP). *MMWR* 1997; 46 (No. RR-18): 14-17.

[3] McHutchison JG., Gordon SC., Schiff ER, et al. Interferon Alfa-2b Alone or in Combination with Ribavirin as Initial Treatment For Chronic Hepatitis C. *NEJM* 1998;339: 1485-1492.

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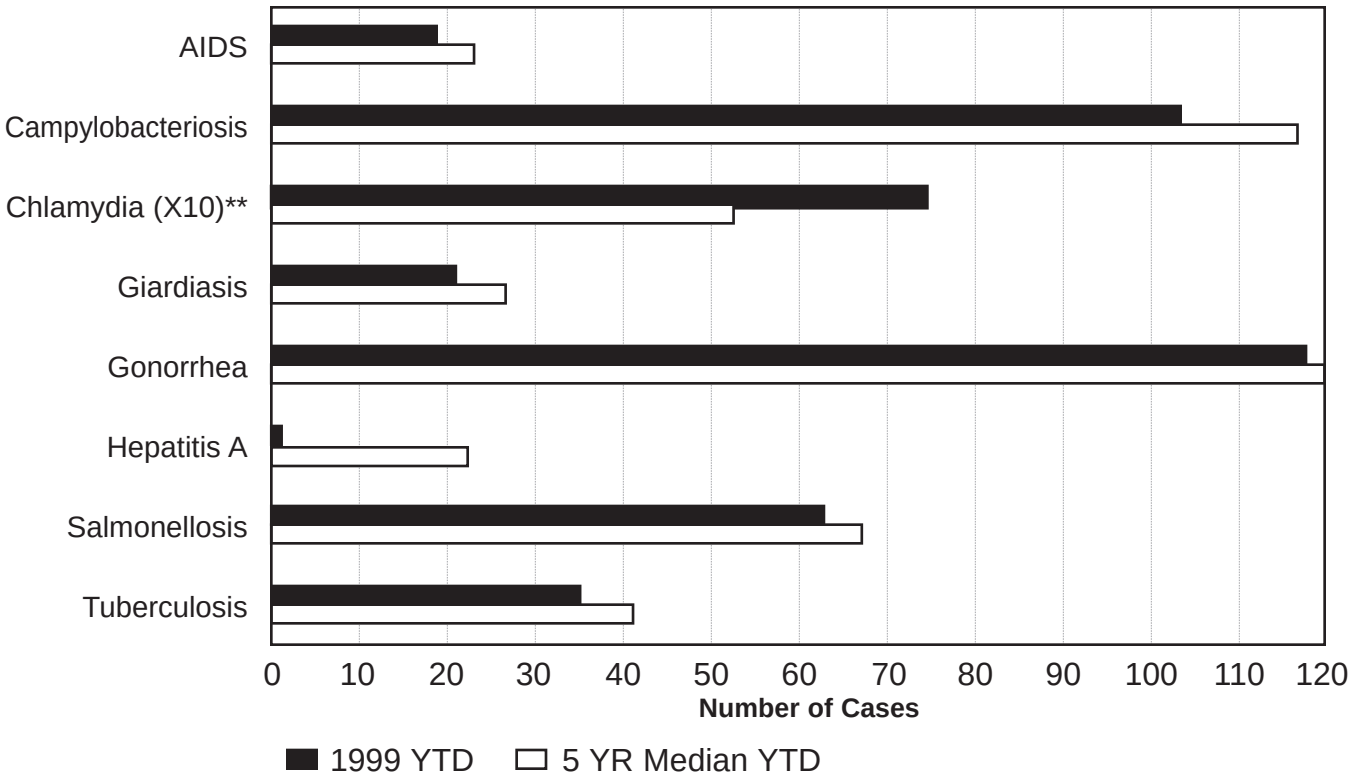
[5] National Institutes of Health Consensus Development of Conference Panel Statement: Management of Hepatitis C. *Hepatology* 1997;26:2S-10S.

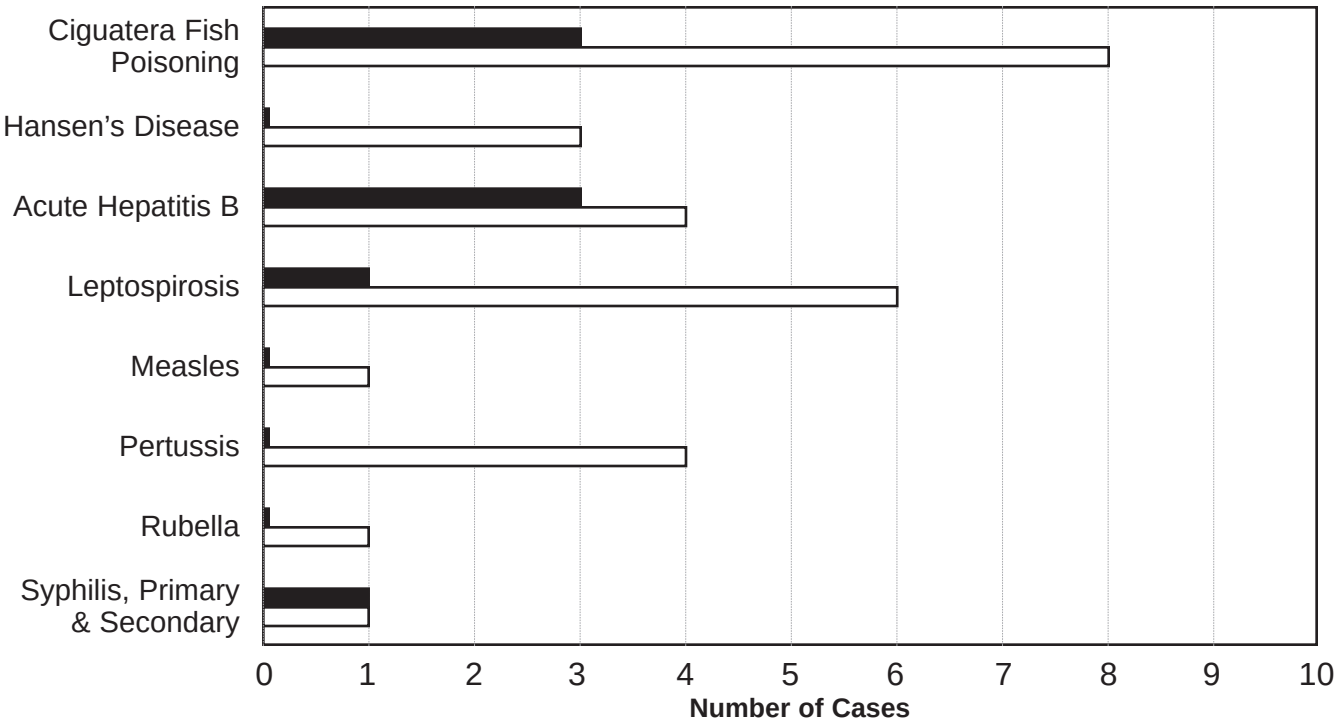
[6] Centers for Disease Control and Prevention. Recommendations for Prevention and Control of Hepatitis C Virus (HCV) Infection and HCV-Related Chronic Disease. *MMWR* 1998;47 (No. RR-19): 1-39.

Submitted by Mitsuto Sugi, M.P.H., and Joe L. Elm, M.A., Epidemiological Specialists, Hepatitis Control Section, Epidemiology Branch.

Communicable Disease Surveillance

Selected Diseases by Date of Report*
Hawai'i, 1999 Year-to-date Through March





* These data do not agree with tables using date of onset or date of diagnosis.
** The number of cases graphed represent 10% of the total number reported.